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To The Problem Of Using The Information And Computer Technology For Specialist's Competitive Training In High School

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Abstract

The article describes the problem of training competent specialist in the informational process from the theoretical point of view. It also points out the ways of using the information-computer technology in training of the future electro engineers. It deals with using the information technology in practice to the future electro engineers. It also describes the formation of competence of future electro engineers. This paper deals with implementation of information-computer technologies within different levels of students at A. Yasawi International Kazakh-Turkish University. Information-computer technologies enable specialists to engage in online exchanges and it gives great opportunity in learning the subject efficiently; thereby expanding their study and learning community beyond the physical classroom. Findings from a survey comprising 170 students demonstrate that they have positive attitudes toward using information-computer technology during the lessons.

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1. Introduction

The educational system of the Republic of Kazakhstan is aimed at joining the world educational space, so the quality of education is considered in the context of the correspondence of the level of education services to world standards and norms. Nowadays the priority is to achieve such a quality of preparation of specialists, which will give them the opportunity to compete on the international labor market. In the conditions of market relations and increasingly complex requirements to the content of education, methods of organization of educational process to search for new reserves of raising the quality and effectiveness of training of the future specialists.

At the present time there are considerable changes in the system of higher education of Kazakhstan. The main task of the higher school of Kazakhstan is to prepare highly qualified, competitive specialists, which requires a master not only of specific knowledge, but also in the ways independent of their obtaining and understanding of new information in the professional activity. This involves the development of a special system of measures in professional training of future specialists, the research methods of the analysis, evaluation, storage of the information, its practical use, for the development of skills of self-setting objectives and problems, the analysis of the decisions, to allocate a new thing, make conclusions.

In the modern rapidly developing technological society there is an increasing need for highly skilled and professionally competent specialists. The modern world's trends in the development of higher education predetermine the necessity of rethinking its role and mission of developing new approaches and identify new priorities for the company. This is an objective process, caused by the entry of humanity into the new, informational culture of the XXI century is the century of high technologies, hitherto unknown in the civilization development.

Modernization of Kazakhstan's education determines the main purpose of professional education as preparation of qualified specialists of the appropriate level and profile, fluent in their profession, able to effectively work on a specialty at the level of the world standards, ready to career development and occupational mobility.

An important factor in the development of higher education is the informatization of the realization of a complex of measures aimed at ensuring full and timely use of reliable knowledge in all socially significant types of human activity. The process of informatization, having arisen simultaneously with the proliferation of electronics, computers, communication, intensive development and changes the nature of work and the place of man in the educational space (S.T.Nyshanova).

Modern society requires a transition to a fundamentally new level of high-quality education. The state of education of the Republic of Kazakhstan and the trends of development of the company require an urgent solution to the problems of the accelerated development of the educational system on the basis of computer technologies and the creation of a single educational information environment.

Future specialists should be competitive and in demand on the labor market. Therefore, the aims of education are defined, first of all, on the basis of the requirements of the curriculum for knowledge and skills and the requirements of the company to the development and education of the new generation. Students should be able to independently, actively operate, make decisions, to adapt flexibly to the changing conditions of life.

2. The actuality of the research.

The modern period of development of society is characterized by the process of informatization - the use of information as a social product, providing acceleration of scientific-technical progress, the intellectualization of the main types of human activity and the democratization of society.

The educational system should not only give the students the necessary knowledge about the new informational environment of the society, the practical ability to use its features, but also form their new world outlook, which should be based on an understanding of the main role of information and information processes in human society. Modern technologies in the teaching open access to non-traditional sources of information, increase the efficiency of independent work, give absolutely new opportunities for the creation, acquisition and consolidation of various professional skills, allow to realize a fundamentally new forms and methods of training (K.M.Berkimbaev).

By the conclusion of the UNESCO, Informatization is a large - scale application of methods and means of collection, storage and dissemination of information, ensuring systematization of existing and formation of new knowledge, their use of the company for the current control and further improvement and development. It is obvious that on the one hand both of these definitions do not contradict each other, and, on the other hand, determine, including computerization of education, which is one of the areas of human activities. Thus, the concept of "Informatization of education" can be entered through adaptation of the aforementioned definitions.

Informatization of education is a field of scientific-practical human activity, aimed at the application of technologies and equipment for collection, storage, processing and disseminating information, providing the systematization of the existing and development of new knowledge in the sphere of education for the achievement of psychological-pedagogical purposes of training and education (V.V.Grinshkun).

Informatization involves technological change in the content, methods and organizational forms of education. This should be solved the problem of the content of education at the present stage, the ratio of traditional part of the educational process and computer technologies, the new relationship between the student, the teacher and the educational environment. The development of the information-computer technologies entails the formation of a new educational system, which can ensure the delivery of educational services in the educational process of the University.

At the present time game technology, technology of individualization of education, problem teaching,

communicative technologies, etc. have been created and are successfully used. They are all based on the methods of active learning, so they are referred to as the modern educational technologies.

In conditions of reforming of the education course is taken for the application of the competence-based approach, since it enhances the proper practice-oriented education, its pragmatic, subject and professional aspect. Not excluding the known approaches in pedagogy – personal-oriented and systematic, but combining elements of both of them, the competence-based approach has the humanistic, pragmatic and practical orientation, that allows to speak about its interdisciplinary and systemic features. Systematic is realized through the integration of all components of the educational process in a holistic and dynamic system of teaching.

The reforms of higher education, caused by the socio-economic and public-political transformations, the constant growth of the volume of the information, increase of the number of studied disciplines in stable terms of training at the universities, put a number of serious problems in front of the system of professional training of future specialists. One of them is the training of future specialists in accordance with modern requirements:

Accounting of multi-level structure of higher education of the Republic of Kazakhstan in accordance with the regulations; intensification of educational process due to the optimal combination of traditional and innovative forms, methods and means of training; a distinct statement of the didactic tasks and their implementation in accordance with the objectives and contents of education.

The great importance here is the informatization of education, based on the creative process of introduction of modern information-computer technologies of training. The introduction of information-computer technologies in the educational process can become a basis for formation of fundamentally new forms of continuous education, based on a detailed self-assessment, supported by technological means and motivated by the results of educational activity of the person.

At the present time it is still a problem the use of information - computer-teaching technologies in the educational process of the high school.

Despite the urgency of this problem there is no single, coordinated for these purposes strategy. Issues of use of information -computer technologies of training weakly associated with the teaching plans and programs. The psychological and pedagogical aspects of creation and introduction in educational process of high school information -computer technologies have not been adequately studied and worked out.

The analysis of the higher school of pedagogical practice allows asserting that the process of their implementation today the former is very spontaneously. One of the main reasons of such situation is the absence of a uniform methodology for the use of information -computer technologies of training in the system of professional training of specialists, which in turn creates a lot of problems, starting from creation of the infrastructure of informatization of the education and finishing with the use of available educational software products in educational process.

Thus, there is an objective contradiction between the real need of the use of information-computer technologies of training and lack of elaboration of the didactic aspects of the creation and use of information-computer technologies of training.

3. Methods

In this survey a questionnaire method was used to collect data. The pen and paper version was used, which was distributed to the students of the Engineering-pedagogical Faculty. The reason why the survey included only the students of the Faculty of Engineering is that other than the experience gained by attending classes; its participants can express their opinions on the effectiveness of a teaching model as future specialists and education experts. A total of 180 questionnaires were returned of which 170 were properly filled in. The questionnaire used in this Survey included questions about the effectiveness of different informational- computer technologies in teaching, as well as the effectiveness of such teaching with and without the use of educational soft ware. The students were asked to read statements about the effectiveness of a informational- computer technologies in teaching and to indicate their level of agreement with these statements based on the five point Likert scale: strongly disagree, disagree, partially agree, agree, and strongly agree. In order for the students' responses to be expressed quantitatively, scores of effectiveness were assigned to them from 1 for the response "strongly disagree" to 5 for the response "strongly agree".

Analysis of the results obtained in the process of experimental work on studying the level of formed competences was carried out with the use of coefficient of the completeness of the formation of skills, which was

considered in the studies Yu.K.Babanskiy, V.P.Bespalko, V.V.Zavyalova, A.V.Usovoy. It is defined according to the following formula:

$$K = \left(\sum_{i=1}^N ni \right) : (n * N) = (n1 + n2 + ...nN) : (n * N)$$

Where: ni is the number of correctly completed technological operations;

n - the number of operations that must be implemented;

N - number of students, the course of their work;

K - the coefficient of the completeness of the formation of skills.

In accordance with this method, it was determined status categories, determining the formation of competences in the interval:

- professional - $0,9 < k < 1$; high level of $0,7 < 0,9 < k$; advanced - $0,5 < 0,7 < k$; elementary - $0,3 < 0,5 < k$; of $0,3 < k$ - Initial - k

The number of students who have achieved a high level of ability and readiness to solve the problems, increased from 5 to 15%, and test advanced level - from 15% to 44%. The obtained results allow us to speak about the fact that the professional level requires a greater time and methodological equipment immersion students in the professional environment. In other words, didactic opportunities of application of the elective courses (pilot course - 2 credits) in their relationship with the compulsory courses allow students mainly to advanced-level competencies.

4. The results of the research

Work with the students of experimental groups, who studied in A.Yasawi International Kazakh Turkish University according to the developed experimental materials of the elective course «Engineering educational science and technology» are reflected in the diagram (figure 1).

The obtained results testify to the stable positive dynamics in the interest of the developed content of the program, oriented on the formation of professional competences of students of different specialties of the University: the selected content, forms and methods of study of the proposed course contribute to the successful completion of the competences needed in the future professional activity of the graduates. The obtained results give grounds to assert that the introduction of elective courses allows achieving the positive trends in the submitted competences of students, which is due to the professional level of the generated competences. The range of types of professional activity and their depth require more substantial at the time of the full-time students in the practical work. We believe that in the modern high school of interest and attention to the implementation of elective courses, built on the ideas of competence-based approach, as part of the leadership of the University, and the students will increase.

Table 1 - Changes in of the formation of professional competence of future specialists

The name of the levels	Considering the experiment		Imaging experiment		Control experiment	
	CG	EG	CG	EG	CG	EG
Primary	43,4	43,7	40,1	10,6	37,1	-
Elementary	48,2	49	45,5	31,2	44,7	18,2
Advanced	10,4	7,3	14,4	39,0	18,2	52,8
High	-	-	-	19,2	-	29

The analysis of the obtained results allows noting the positive trends of assimilation of the material in the training process based on the developed program. As shown by the data obtained, the further development of training in the field of formation of professional competence of specialists due to the more active involvement of

students in the professional environment and increasing the time allocated to the professionally oriented disciplines at the students' choice.

The problem of formation of professional competence of the future specialists should be considered from the positions of formation and development of the future specialist's culture. That is, the essence of the implementation of tasks aimed at establishing the competence of a student of the high school, should involve not only the orientation of the knowledge and skills defined in the content of the compulsory and elective subjects, but also the formation of experience of the application of this knowledge and skills. On the basis of the received results it is possible to speak about the necessity to introduce certain cycles of study elective courses with a view to their conformity to the development of social and professional interests of students, as well as a more complete reference to compulsory disciplines.

5. In conclusion

We would like to say that, nor in spite of this, information-computer technologies creates the conditions for the individualization and intensification of the training process, ensuring the implementation of the equal on the complexity of the exercise of all the students studying at the same time.

The use of information and computer technologies is the main basis for the preparation of competitive specialists. Proceeding from a fore said, it is possible to formulate priorities, which follow from the requirement of the training of competitive specialists at the high school.

The first is the increase of the level of training of specialists due to perfection of technologies of training, used today at the high school, and of wide introduction of information media in educational process.

The second is to master the student of high schools the complex of knowledge, skills and abilities, development of personal qualities, ensuring successful implementation of the tasks of professional activity and comfortable functioning in the conditions of informational society, in which information is becoming crucial for high efficiency of work.

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